



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,089	04/16/2004	Edgar Schmidhammer	P04,0043	9244

26574 7590 02/16/2006

SCHIFF HARDIN, LLP
PATENT DEPARTMENT
6600 SEARS TOWER
CHICAGO, IL 60606-6473

EXAMINER

SUMMONS, BARBARA

ART UNIT	PAPER NUMBER
----------	--------------

2817

DATE MAILED: 02/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary

Application No.

10/826,089

Applicant(s)

SCHMIDHAMMER ET AL.

Examiner

Barbara Summons

Art Unit

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 and 22-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-20 and 22-28 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/5/05</u> . | 6) <input type="checkbox"/> Other: _____ |

EX PARTE QUAYLE ACTION

Drawings

1. The replacement drawings were received on 12/5/05. These drawings are approved.

Ex Parte Quayle

2. This application is in condition for allowance except for the following formal matters:

In the specification:

On page 4, on line 15, "volume waves" should be changed to the standard terminology that agrees with claim 1, - - bulk acoustic waves - - (see claim 1, line 12).

In the claims:

Claim 2 is objected to since it appears that it is not further limiting of claim 1, as amended, which recites "the second partial filter being a balun" (see claim 1, line 14). That is, claim 2 recites "a balun" in the reception branch which has already been recited in claim 1, and a further balun would not appear necessary since the inventive idea of a balun integrated with the filter (see e.g. Fig. 7D) is to avoid the need for a separate balun as discussed in Applicants' specification (see page 10, lines 2-5).

The Examiner suggests that claim 2 be rewritten using the terminology of amended claim 1, as follows:

- - A duplexer as claimed in claim 1, wherein said first partial filter has an asymmetrical output, and said second partial filter balun is connected between said first partial filter and said reception output. - -.

Art Unit: 2817

In claim 10, on lines 2-3, to avoid possible confusion the Examiner suggests changing "a transformer" to - - an impedance transformer - - (see e.g. the specification at page 4, lines 9-16 and page 7, lines 17-19).

The above change would avoid possible confusion between the impedance "transformer" and the interdigital "transformers" of the surface acoustic wave (SAW) device (see e.g. claim 10, lines 3-4 and the specification at page 5, lines 19-21 and page 10, lines 10-13).

In claim 11, on line 3, to maintain consistent claim terminology "volume" should be changed to - - bulk - - (see claim 1, line 12).

Similarly, in claim 22, on line 3, "volume" should be changed to - - bulk - -; and

In claim 22, on line 5, "volume" should be changed to - - bulk - -.

In claim 23, on line 2, "volume" should be changed to - - bulk - -.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

Allowable Subject Matter

3. Claims 1-20 and 22-28 are allowable over the prior art of record.
4. The following is a statement of reasons for the indication of allowable subject matter:

The Examiner agrees with Applicants' arguments that the prior art of record does not disclose or fairly suggest a duplexer having each of the specifically recited features, especially a "reception bandpass filter... comprised of a first partial filter and a second partial filter", wherein the first partial filter comprises "a plurality of bulk acoustic wave resonators" and with the "second partial filter being a balun having an acoustic track... comprising a plurality of surface acoustic wave transducers" (see claim 1, lines 8-17). A further search for such a duplexer yielded several interesting references, some of which integrate a first filter portion with another balun filter portion, but do not mix SAW and BAW filter portions. The references being made of record are discussed below.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Takeuchi et al. U.S. 2004/0140868 discloses a duplexer (Fig. 10) comprising a filter (Fig. 8) having a first filter portion 11 and a balun filter portion 14 with both portions being formed with BAW resonators (see sections [0096], [0098], [0101] and [0103]).

Aigner et al. U.S. 2003/0179053 discloses filters (see Figs. 4 and 6) that have a first filter portion and a second filter portion and an integrated balun function (see e.g.

Art Unit: 2817

the abstract), with both filter portions using BAW resonators (see e.g. sections [0041] and [0043]).

Hikita et al. U.S. 6,714,099 discloses duplexer filters (see e.g. Fig. 9) that have a first ladder filter portion and a second balun portion that are either both comprised of BAW resonators (Fig. 16A) or SAW resonators (Fig. 15).

Onishi et al. U.S. 5,892,418 discloses a SAW filter (see Figs. 5-7) that has a SAW lattice portion and SAW balun portions on either one or both input/output sides thereof (see also Fig. 12a which clearly shows the lattice filter portion is a SAW filter).

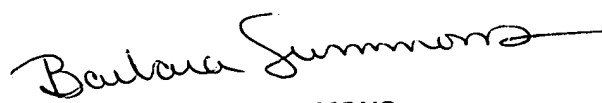
Mita JP 2001-292050 discloses a SAW filter (Fig. 11) that has a SAW ladder filter portion 137 and a SAW balun filter portion 135 that also provides an impedance transformation (see the abstract and Fig. 1).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara Summons whose telephone number is (571) 272-1771. The examiner can normally be reached on M-Th, M-Fr.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bob Pascal can be reached on (571) 271-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

bs
February 14, 2006


BARBARA SUMMONS
PRIMARY EXAMINER



Approved
for Entry
2/13/06
BS

SN 10/826,089
REPLACEMENT SHEET

FIG 1A

(PRIOR ART)

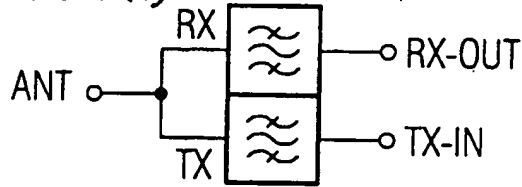


FIG 1B

(PRIOR ART)

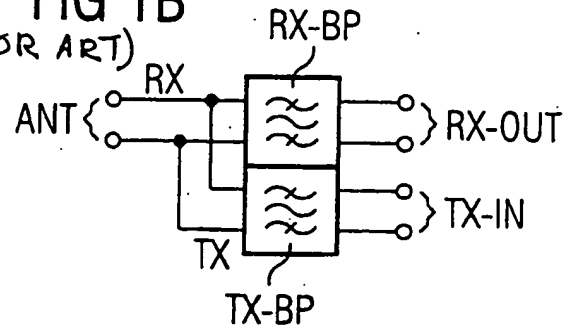


FIG 2

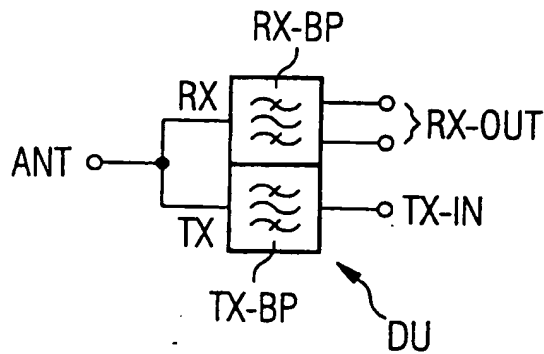


FIG 3

